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PREVENTION OF INTRANASALLY-INOCULATED POLIOMYELITIS OF MONKEYS BY INSTILLATION OF ALUM INTO THE NOSTRILS

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Various agents have been reported as exerting a local influence upon the susceptibility of tissues to various viruses, such as those of vaccinia, encephalitis (St. Louis type), and equine encephalomyelitis, by Ledingham (*1*), Carnot and his coworkers (*2*), Le Fevre (*3*), Rivers (*4*), Armstrong (*5*, *6*), Olitsky and Cox (*7*), and others. In view of considerations which indicate that the nasal mucous membranes constitute one, and perhaps the most usual, natural route of infection in poliomyelitis, it was deemed desirable to determine whether the mucous membrane of the nose of monkeys could be rendered less permeable to poliomyelitis virus through treatment with solutions of sodium aluminum sulphate, which have been shown to render mice increasingly resistant to the intranasal administration of encephalitis virus (St. Louis type) (*6*).

EXPERIMENTAL METHOD

Fresh *Rhesus* monkeys, distributed as to weight, were given identical care and treatment except that the test animals received instillations of 1.5 cc of a 4 percent sodium aluminum sulphate solution into each nostril, at varying times relative to the virus inoculations, by means of a tuberculin syringe from which the needle had been removed,[1] while the control animals received either 1.5 cc of normal sodium chloride solution or, in most instances, no treatment whatever (table 1).

Virus for each test was prepared by grinding portions of cords from several animals which had recently died of poliomyelitis and diluting to the desired concentration with 0.85 percent sodium chloride solution. Centrifugation was carried out at slow speed to remove gross particles and the supernatant fluid used for intranasal inoculation. Concentrations of 2.5, 4, and 5 percent were employed in different tests, three inoculations of 1 cc of the appropriate suspension being administered into each nostril at intervals of 24 hours (table 1).

* From the National Institute of Health, Washington, D. C.

[1] Gentian violet similarly introduced was found, through frozen preparations, to stain the entire nasal membranes.

TABLE 1.—*Details of tests*

Monkey no.	Intranasal preparation and inoculation							Day of complete paralysis following first intranasal virus inoculation			Onset of fever by days following first virus inoculation		Remarks
								Alum-prepared monkeys	Saline-prepared monkeys	Controls	Alum-prepared monkeys	Control monkeys	
					1/22/35	1/23/35	1/24/35						
899	A 12 doses of alum, 12/27/34 to 1/21/35				V	V	V	S					V=1 cc 5 percent polio cords each nostril.
873					V	V	V	S					
903					V	V	V			9		5	
887					V	V	V			9		5	
				2/4/35	2/5/35	2/6/35	2/7/35						
894				A	AV	AV	AV	S					V=1 cc 2.5 percent polio cords each nostril.
895				A	AV	AV	AV	S					
		2/2/35	2/3/35	2/4/35	2/5/35	2/6/35	2/7/35						
897		A	A	A	V	V	V	*6					
893		A	A	A	V	V	V	S					
		1/30/35	1/31/35	2/4/35	2/5/35	2/6/35	2/7/35						
905		A	A	A	V	V	V	S					
904		A	A	A	V	V	V	●S					
					2/5/35	2/6/35	2/7/35						
902					V	V	V			S			
901					V	V	V			10		6	
	2/24/35	2/25/35	2/26/35	2/27/35	2/28/35	3/1/35	3/2/35						V=1 cc 5 percent polio cords each nostril.
919	A	A	A	AV	AV	AV	A	S					
918	A	A	A	AV	AV	AV	A	S					
917	A	A	A	AV	AV	AV	A	S					
916	A	A	A	AV	AV	AV	A	S					
	2/18/35	2/22/35	2/26/35	2/27/35	2/28/35	3/1/35	3/2/35						

911	A	A	A	V	V	V	A	S					
910	A	A	A	V	V	V	A	S					
909	A	A	A	V	V	V	A	12				5	
908	A	A	A	V	V	V	A	S					
				2/27/35	2/28/35	3/1/35							
915				V	V	V					S		
914				V	V	V					S		
913				V	V	V					9		5
912				V	V	V					9		4
	3/31/35	4/1/35	4/2/35	4/3/35	4/4/35	4/5/35	4/6/35						
935	A	A	A	AV	AV	AV	A	12				6	
934	A	A	A	AV	AV	AV	A	24				5	
933	A	A	A	AV	AV	AV	A	15				10	
932	A	A	A	AV	AV	AV	A	12				7	
927	S′	S′	S′	S′V	S′V	S′V	S′		9				4
926	S′	S′	S′	S′V	S′V	S′V	S′		11				5
925	S′	S′	S′	S′V	S′V	S′V	S′		8				3
924	S′	S′	S′	S′V	S′V	S′V	S′		11				6
931				V	V	V					9		4
930				V	V	V					10		5
929				V	V	V					9		4
928				V	V	V					9		4
		4/19/35	4/20/35	4/21/35	4/24/35	4/25/35	4/26/35						
951					AV	AV	AV	S					
941		A	A	A	AV	AV	AV	S					
939		A	A	A	AV	AV	AV	S					
938		A	A	A	AV	AV	AV	13				7	
942					V	V	V				14		6
943					V	V	V				11		5
944					V	V	V				*5		
945					V	V	V				10		6

V=1 cc 5 percent polio cords each nostril.

V=1 cc 4 percent polio cords each nostril.

A=Alum, 1.5 cc into each nostril.
V=Virus, 1 cc into each nostril.
AV=Alum, 1.5 cc in morning, virus in afternoon.
S′=Saline (0.85 percent), 1.5 cc into each nostril.
S′V=Saline (0.85 percent), 1.5 cc morning, virus in afternoon.
S=Survived.
*=Death not due to poliomyelitis.
●=Died on 26th day after inoculation of septicaemia; no poliomyelitis.

Temperatures were taken daily. Animals which developed poliomyelitis were allowed to go until complete paralysis developed, when they were etherized and autopsy was performed, and tissues were submitted for pathological confirmation as to cause of death.

RESULTS

One prepared and one control animal died of causes other than poliomyelitis 6 and 5 days, respectively, following their first virus inoculation. Among the remaining 23 alum-prepared animals 17 survived the virus inoculations, while among 19 control monkeys there were but 3 survivals, or 74 and 16 percent, respectively (table 2).

TABLE 2.—*Summary of results*

	Total number of monkeys	Monkeys dead of poliomyelitis	Monkeys dead of other causes (excluded)	Survived poliomyelitis inoculations	Average number of days, first inoculation to complete paralysis	Average number of days, first inoculation to onset fever	Average number of days of illness	Percent survived
Alum-prepared	24	6	1	17	14⅔	6⅔	8	74
Controls	20	16	1	3	9 1/16	4 1/16	5	16

In some of our tests (table 1) the alum administrations varied in their time relationship to the virus instillations, and so in certain instances one group of animals was permitted to serve as controls for more than one test group; consequently the controls and test groups of animals were not exactly equal in number. In view of the fact that the virus dosage varied in different tests, it appears that this variation in the number of monkeys in the two groups in some instances tended to favor the test groups; for, if we render the test and control groups of monkeys equal in each test, by supplying animals and attributing the same incidence of poliomyelitis to these theoretical groups as developed in the actual groups which were duplicated, it is found that 63 percent of the alum-prepared animals would have lived as compared with 24 percent for the controls (27 animals each group).

In addition to their higher survival rate, the alum-prepared animals which developed poliomyelitis tended to develop the disease later and the ailment tended to run a slower course than was the case in the control groups. For instance, the average interval from the first intranasal virus inoculation to onset of fever (40° C.+) in the prepared animals which died of poliomyelitis was 6⅔ days as compared with 4 1/16 days for the control groups. The average interval from first virus inoculation to complete paralysis in the two groups was 14⅔ days and 9 1/16 days, respectively.

Among the 17 survivals from the alum-prepared group there were 8 monkeys which ran a course of fever, beginning from 5 to 21 days

following the first inoculation and lasting from 6 to 13 days, which seemed probably due to poliomyelitis (table 3). Monkey 951 developed partial paralysis in the hind legs; the others showed no detectable crippling. The three survivals from the control group developed no febrile response.

TABLE 3.—*Surviving animals that developed fever but recovered*

Monkey no.	Interval from first inoculation to onset fever	Duration of fever	Remarks
	Days	*Days*	
873	19	6	Complete recovery.
899	20	6	Do.
895	17	7	Do.
911	13	12	Do.
918	21	8	Do.
919	11	6	Do.
941	5	6	Do.
951	9	13	Developed partial paralysis hind legs.
Average	14⅓	8	

IMMUNITY

The fact that there were 8 alum-prepared animals which developed fever but survived, while in the control group all those developing fever went on to complete paralysis, together with the fact that among the group which died the alum-prepared animals tended to develop symptoms later and to live longer than the controls, led us to feel that the alum-treated surviving animals might tend to develop a specific immunity. This result had been previously shown for alum-prepared white mice inoculated intranasally with the virus of encephalitis (St. Louis type) (Armstrong *(8)*).

Seven surviving animals were consequently inoculated intracerebrally with what was estimated to be about 10 minimal infectious doses of poliomyelitis virus. Four of these 7 animals and one of the control group of 2 animals withstood the inoculation. Thus no obvious increase of immunity was apparent from this test. The sera from surviving animals have not been tested for protective properties. After sufficient time has elapsed to allow the mucous membranes of other surviving animals to return to normal, it is planned to retest them by the intranasal route, as it is felt that this is a more practical test for immunity in such animals.

ACTION OF ALUM

The mechanism by which alum exerts its protective effect against poliomyelitis is not definitely determined; however, it has been shown (*5*) that diphtheria toxin exerted a local inhibitory action against vaccine virus through the cellular response which it engendered. Since 6 alum-prepared monkeys died of poliomyelitis while

8 ran a fever but recovered, and since animals in which the virus inoculations followed the last alum instillation by 24, 48, and 72 hours survived in excess of the controls, it is indicated that the protection is probably not due to an antiseptic action of the alum.

The authors have sprayed a 1-percent alum solution into their nostrils on 3 successive days. The treatment produced some temporary tickling and stinging which resulted in an occasional sneeze, and there was increased secretion for perhaps an hour, followed by a feeling of dryness which disappeared after several hours.

The search in mice for solutions more protective than alum against the virus of encephalitis (St. Louis type) is being continued and preliminary results indicate that such solutions exist. These tests, if confirmed, will be applied to poliomyelitis in monkeys.

The results here reported are not recommended for human use, but offer a hopeful avenue of approach which may lead to effective methods against poliomyelitis and possibly against other diseases contracted by way of the nasal mucous membranes.

SUMMARY

1. The instillation of sodium aluminum sulphate, 4 percent, into the nostrils of monkeys resulted in the survival of 17 from a group of 23 animals, while only 3 from a group of 19 nonprepared controls survived similar intranasal inoculation with poliomyelitis virus.

2. Poliomyelitis tended to develop later and to run a slower course in the alum-prepared group than in the nonprepared controls.

3. The protective action of the alum solution is believed to be due to an alteration which decreases the permeability of the mucous membrane of the nose rather than to an antiseptic action.

REFERENCES

(1) Ledingham, J. C. G.: The role of the reticulo-endothelial system of the cutis in experimental vaccinia and other infections: Experiments with India ink. Brit. J. Exp. Path. (1927), **8**, 12–25.

(2) Carnot, P., Carnus, L., and Benard, H.: Action empêchante des radiations ultra-violettes sur la vaccine expérimentale du lapin. C. R. Soc. de Biol. (1926), **95**, 457–459.

(3) Le Fevre de Arric, M.: Action empêchante des rayons X sur la vaccine expérimentale du lapin. C. R. Soc. de Biol. (1927), **96**, 208–209.

(4) Rivers, T. M., Stevens, H., and Gates, F. L.: The reaction of irradiated skin to vaccine virus. J. Exp. Med. (1928), **47**, 37–44.

(5) Armstrong, C.: Modification of the vaccine response in rabbits by the application of diphtheria toxin to the vaccination site. Pub. Health Rep. (1933), **48**, 1–7.

(6) Armstrong, C.: Effect of experimental local irritation upon susceptibility to vaccine and encephalitis virus (St. Louis type). Pub. Health Rep. (1935), **50**, 43–50.

(7) Olitsky, P. K., and Cox, H. R.: Temporary prevention by chemical means of intranasal infection of mice with equine encephalomyelitis virus. Science (1934), **80**, 566–567.

(8) Armstrong, C.: The production of specific immunity in white mice by intranasal inoculation with encephalitis virus (St. Louis type). Pub. Health Rep. (1934), **49**, 959–960.

TULARAEMIA

Susceptibility of the White-tailed Prairie Dog, *Cynomys leucurus* Merriam [1]

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During the latter part of May 1933, 7 white-tailed prairie dogs (3 adult females, 1 adult male, and 3 young animals), captured in northwestern Colorado, were brought to the Rocky Mountain Laboratory to be tested for susceptibility to tularaemia. On June 9 each animal was injected subcutaneously with 0.0000002 cc of a 500 turbidity suspension of *Bacterium tularense*. Two domestic rabbits and two guinea pigs each received the same dose, administered in the same manner. Since the prairie dogs were infested with lice, they were placed in cloth bags.

Six days following the injection the adult male, 1 female and 2 of the young dogs were found dead. In each case the spleen, liver, and inguinal lymph nodes were suggestive of tularaemia. Blood-stained fluid was present in the abdominal cavity. As this was a period of extreme heat, the *post mortem* changes were so marked that no cultures were attempted. The remaining 2 adult females and the single remaining young one were definitely ill and were bled for culture. Two days later these prairie dogs also died, and each showed numerous discrete white foci in the liver and spleen. The peritoneal cavity of the young prairie dog contained a large amount of clear fluid. A pure culture of *Bact. tularense* was recovered from the heart blood of this animal. Cultures from the other prairie dogs showed typical *tularense* colonies but were overgrown by a mold.

Six sucking lice (*Neohaematopinus laeviusculus* (Grube))[2], recovered from the bags in which the prairie dogs had been placed, were ground in saline and injected intraperitoneally into a guinea pig. This guinea pig died on the fifth day of typical tularaemia, and a pure culture of *Bact. tularense* was recovered from the heart blood.

The control rabbits and guinea pigs died of typical acute tularaemia, the former on the sixth and seventh days, respectively, and both the latter on the fifth day. A pure culture of *Bact. tularense* was recovered from the heart blood of one rabbit. Cultures from the other control animals were not attempted.

SUMMARY

Seven prairie dogs, 4 adults and 3 young, when injected with *Bact. tularense*, died showing gross lesions suggestive or typical of acute tularaemia, and a pure culture of the organism was isolated from the

[1] Contribution from the Rocky Mountain Laboratory, United States Public Health Service, Hamilton, Mont.

[2] Determination was made by Assistant Bacteriologist W. L. Jellison, of the Rocky Mountain Laboratory.

heart blood of one shortly before death. The specific organism was also isolated from the guinea pig injected with lice which had fed on the infected prairie dogs.

USE OF BELOW-FREEZING TEMPERATURES FOR MAINTENANCE OF MENINGOCOCCUS CULTURES (*Neisseria intracellularis* Weichselbaum)

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This paper reports the preservation of meningococci by simple storage in pure undiluted neutral glycerin at −15° C.

It has long been known that below-freezing temperatures are not necessarily destructive to the viability of pathogenic organisms. Numerous reports have been made of the tolerance to cold of viruses, yeasts, and the hardier bacteria, but few investigations have been reported of the tolerance of meningococci to cold; in fact the literature is full of statements that meningococci are easily killed by low temperatures.

Meningococci are undoubtedly delicate microorganisms and often difficult to maintain in stock cultures. It is generally stated that the optimum temperature requirements of these organisms lie between 36° and 38° C., though most workers are agreed that the tolerance range extends much farther below than above the optimum. Many authors (*1–5*) have reported that meningococcus cultures remained alive in the refrigerator (6° to 8° C.) from 3 days to a week. Bettencourt and Franca (*6*) have reported the survival of some strains in the refrigerator for a month. Flexner (*7*) placed cultures in the refrigerator, not only at 2° above freezing, but also at 5° below freezing. He observed that thick suspensions in salt solution survived for 5 days. At the same time, his report that such saline solution is somewhat injurious to meningococci suggested the importance of the menstruum used.

Other authors have reported storage of meningococci at temperatures lower than those just cited. Von Lingelsheim (*1*), in 1906, observed the survival of meningococci at −10° and −20° C. for short periods. Murray (*9*) scraped the growth from agar plates, smeared it on the walls of tubes, and subjected these to temperatures of −63° and −78° C. for 15 to 20 minutes. He obtained good rapid growth on subsequent subculture. Elser and Huntoon (*8*) later reported that "meningococci may remain alive for years if dried rapidly under freezing temperatures and kept frozen." Their work was done according to the method originally described by Shackell (*10*), in which the material was frozen and then dehydrated in vacuum, a method later used by Rogers (*11*) in preserving mass cultures of lactic acid-forming

bacilli, as well as by Hammer (*12*), and Shattock and Dudgeon (*13*). Swift (*14*) made special application of this desiccation-after-freezing method to the preservation of meningococci, and he has reported viability after a period of at least 2 months. Reichel (*15*) has more recently used this method with some modifications and has found meningococci viable after a period of at least 6 months. During the preparation of the author's report, Rake (*16*) has described the preservation of meningococci for several months by a different technique of freezing and drying. Other authors (*17*, *18*) have reported viability of bacteria other than meningococci when stored at temperatures considerably below freezing, without desiccation.

Recently, Francis (*19*) has reported the maintenance of virulence of *B. pestis* in a guinea pig spleen when suspended in pure undiluted neutral glycerin at −15° C. for 7 years; and also its survival in pure culture when suspended in undiluted neutral glycerin for a period of 2 years and 7 months. He has also found that *B. tularense* maintained its virulence in infected guinea pig spleens which had been suspended in pure glycerin at −15° C. for 6½ years. *B. tularense* in frozen rabbit tissue, not suspended in glycerin but stored at −15° C., was virulent for 6 to 36 months (depending on the tissue involved), whereas the pure culture growth when scraped off and suspended in glycerin at −15° C. was found viable after 2½ years.

It was decided to apply the simple method reported by Francis to an investigation of the survival of meningococci when stored in pure undiluted neutral glycerin at −15° C. In making this study, 10 strains, representing different serological groups and various periods of laboratory maintenance, were chosen from a large stock collection of meningococci. Four of these, nos. 123, 55, 57, and 60, were very old strains which had originally been received from the Rockefeller collection in 1916. They had been carried on artificial media for over 16 years and had been used for a long time as the 4 standard type strains representing the Gordon-Murray groups of meningococci. The other 6 varied in age from 2 months to 3 years. Four of them, nos. 331, 173, 302, and 158, were recently chosen as the strains representing most nearly the 4 meningococcus type strains described by Gordon and Murray; the other 2 strains, nos. 198 and 479, had been found especially suitable for the preparation of toxic filtrates by the method of Ferry (*20*). It was particularly interesting to use strain 302 in this study, because it had been especially difficult to cultivate on laboratory media.

These strains were planted on glucose agar slants and incubated at 36.5° C. for 24 hours. Sixteen well-grown, 24-hour cultures were made from each strain. They were divided into 2 groups of 8. In group A, the growth was scraped off the slants, and suspended in small vials of glycerin, and the vials were tightly stoppered and

immediately stored at −15° C. In group B, glycerin was poured over the growth on the entire slant. The tubes were tightly stoppered and immediately stored at −15° C. After a period of 2 months, 1 tube and 1 vial of each strain were taken out of storage and transfers were made to freshly prepared glucose agar slants and blood agar slants. After incubation at 36.5° C., the cultures were examined. Every culture was found to grow well. Similar tests were made after periods of 3 months, 6 months, 12 months, 18 months, and 24 months. In each instance viability was demonstrated by transfer to glucose agar slants. After the 2-year period, the transplants grew more slowly and the growth seemed more delicate than previously. In a few instances it was necessary to make cultures from two vials, or tubes, before obtaining growth. Morphologically, the organisms appeared unchanged in size, shape, and grouping. Their staining reactions were normal.

After storage for 2 years under these conditions it was decided to study these strains serologically and biochemically. Table 1 is a report of the agglutination reactions of these strains with monovalent sera before and after the 2-year storage. It indicates that the serological characteristics have remained unchanged. Table 2 shows the fermentation reactions before and after the 2-year storage period.

TABLE 1.—*Serological reactions of 10 strains of meningococci before and after 2 years' storage at −15° C*

BEFORE STORAGE

Antigen	Serum 331 (I)	Serum 173 (II)	Serum 302 (III)	Serum 158 (IV)	Serum 123 (I)	Serum 55 (II)	Serum 57 (III)	Serum 60 (IV)
331 (I)	444443	000000	431100	000000	443100	000000	321000	000000
173 (II)	110000	444421	000000	000000	321000	431100	211000	000000
302 (III)	432100	000000	444431	000000	433221	210000	321000	000000
158 (IV)	000000	000000	000000	442200	000000	000000	000000	442100
123 (I)	443321	210000	444442	000000	444322	322100	443200	000000
55 (II)	000000	432100	222100	100000	110000	444321	110000	000000
57 (III)	433321	000000	333332	000000	442211	321100	433221	000000
60 (IV)	000000	100000	000000	442100	000000	000000	000000	443300
198 (I)	444300	000000	432100	000000	443100	221100	211000	000000
479 (III)	000000	000000	433200	000000				

AFTER STORAGE

331 (I)	444310	110000	110000	000000	432100	100000	110000	000000
173 (II)	000000	444321	000000	000000	000000	432100	000000	000000
302 (III)	110000	100000	444310	000000	332200	210000	432100	000000
158 (IV)	000000	000000	000000	443210	100000	000000	000000	433100
123 (I)	333100	210000	321100	000000	432100	110000	321000	000000
55 (II)	000000	442100	000000	000000	100000	443200	100000	000000
57 (III)	000000	111100	431000	000000	321000	431100	444310	000000
60 (IV)	000000	000000	000000	441000	000000	000000	000000	431000
198 (I)	442100	000000	310000	000000	331100	431000	211000	000000
479 (III)	000000	000000	443110	000000	211000	000000	333200	000000

NOTE.—Above agglutinations were made with serum dilutions in series of 1:50, 1:100, 1:200, 1:400, 1:800, and 1:1600.

0=no agglutination.

1, 2, 3=varying degrees of agglutination.

4=complete agglutination.

TABLE 2.—*Sugar fermentation by 10 strains of meningococci before and after storage at −15° C. for 2 years*

Number of strain	Before storage at −15° C.				After storage at −15° C.			
	Dextrose	Levulose	Maltose	Saccharose	Dextrose	Levulose	Maltose	Saccharose
331	+	−	+	−	+	−	+	−
173	+	−	+	−	+	−	+	−
302	+	−	+	−	+	−	+	−
158	+	sl	+	−	+	−	+	−
123	+	−	+	−	+	−	+	−
55	sl	−	sl	−	+	−	+	−
57	+	−	sl	−	+	−	+	−
60	+	−	+	−	+	−	+	−
198	+	−	+	−	+	−	+	−
479	+	−	+	−	+	−	+	−

These studies show that the viability of these 10 meningococcus strains was maintained by storage in pure, undiluted, neutral glycerin at −15° C. for a period of 2 years, with no demonstrable change in morphology or in biochemical or serological reactions.

After these 10 strains of meningococci had been in storage for more than a year it was decided to store all 223 cultures of our stock collection at −15° C. Three sets of transplants were prepared—1 set on 0.15 percent semisolid agar and 2 sets on glucose agar slants. These were all incubated at 37° C. for 24 hours. One set of the glucose agar slant cultures (set C) was then prepared as in group B described above (glycerin poured over the slant to cover the entire growth). Set D (glucose agar slants) and set E (the 0.15 percent semisolid agar) were prepared for storage without the addition of glycerin or any other agent. They were all tightly stoppered and stored at −15° C.

After 8 months' storage these cultures were tested for viability. Transfers to glucose agar slants and to blood agar slants were made immediately after removal from the freezing compartment *before the culture had thawed out.* When transferring from a slant culture to which no glycerin had been added it was usually necessary to lift a small frozen block of culture from the top of the slant and transfer it to the new fresh slant.

After transplanting all three sets it was found that 92.8 percent of the strains were viable after 8 months' storage at −15° C. Most of these were recovered from the glucose agar slant cultures; very few were from the 0.15 percent semisolid agar cultures.

It is interesting to note that the percentage of cultures recovered from set D (glucose agar slants stored without the addition of glycerin) was similar to the percentage of cultures recovered from set C (glucose agar slants covered with glycerin). Set D appeared to be in as good condition as set C and equal in viability after the 8 months' storage. It therefore appears that the addition of glycerin is unnecessary for the preservation of meningococci at −15° C. for 8 months.

Its effect, however, on the ultimate longevity of this organism has not been determined.

On the other hand, very few strains were recovered from the 0.15 percent semisolid agar cultures (set E). As reported above, these cultures had been made at the same time and under the same conditions as cultures in sets C and D. They had been transplanted from the same parent cultures, had been incubated for 24 hours and then stored in the −15° C. compartment at the same time. The only difference lay in the media. This observation is in accord with the observation of Flexner (*7*) and of Elser and Huntoon (*21*) that viability of organisms at low temperatures is influenced by the menstruum used. Murray (*9*) has called attention to the importance of the medium used, not only during the cold-storage period, but also used for recovering the strain after removal from the freezing compartment. Murray (*9*) and Swift (*14*) both endorse the use of freshly prepared blood agar for this purpose. Otten (*22*) stresses the need of a "favorable medium, especially the blood-agar plate, to bring the organism to development from its latent life."

In recovering the meningococcus after storage at −15° C. at this laboratory, it has appeared that glucose agar and blood agar were equally favorable, provided they were freshly prepared. Further studies are being made on this point.

From the above reported studies it appears that the meningococcus may be preserved in pure, undiluted, neutral glycerin at −15° C. for at least 2 years. It also appears that the meningococcus may be preserved equally well when stored at −15° C. in pure culture form without the addition of glycerin for a period of 8 months, which is the longest period of observation to date.

Our results indicate, in part, that preservation of meningococci at −15° C. is not only a question of temperature but is influenced by age and condition of culture when stored, medium used during storage period, and medium used for recovery of cultures. The prompt placing of cultures directly in the −15° C. compartment as well as the prompt transplanting of cultures after removal from the below-freezing compartment appear to be essential to the successful recovery of meningococci after cold storage.

In making these studies, it has not been possible to test for maintenance of virulence, since all strains had become avirulent before the experiments began.

This method is presented because of its relative simplicity and its apparent efficiency in maintaining large stock collections of meningococci over long periods of time. Every bacteriologist knows how great is the expenditure of time, labor, and materials in maintaining large stock collections of meningococci by frequent transfers, and of the dangers of contamination or degeneration or sudden loss of strains.

The use of below-freezing temperatures, under controlled conditions, seems to offer a means of preserving unchanged the delicate meningococcus over long periods of time.

SUMMARY

Ten chosen strains of meningococci have been stored in neutral glycerin at −15° C. for 2 years with no apparent change in viability, in morphology, or in serological or biochemical characteristics. Two hundred and twenty-three strains have been stored at this temperature on glucose agar slants, both with and without glycerin, with no appreciable loss of viability in the 8 months during which they have been under observation.

REFERENCES

(1) Von Lingelsheim: (1906) Klin. Jahrb., **15**: 373.
(2) Kutscher: (1906) Deutsche med. Wchnschr., **32**: 1071.
(3) Elser and Huntoon: (1909) Jour. Med. Research, **20**: 377.
(4) Netter and Debré: (1911) La Méningite cérébro-spinale. Masson, Paris.
(5) Sophian: (1913) Epidemic cerebro-spinal meningitis. Krumpton, London.
(6) Bettencourt and Franca: (1904) Ztschr. f. Hyg. u. Infectionskrankh., **46**: 463.
(7) Flexner: (1907) Jour. Exper. Med., **9**: 105, 142, 168.
(8) Elser and Huntoon: Correspondence. Quoted by Hampel in Quarterly Review of Biology (1932), **7**, (2), 172.
(9) Murray: (1929) The meningococcus. Med. Research Council, H. M. Sta. Off., London.
(10) Shackell: (1909) Amer. Jour. Physiol., **24**: 325.
(11) Rogers: (1914) Jour. Inf. Dis., **14**: (1), 100.
(12) Hammer: (1911) Jour. Med. Res., N. S., **19**: 527.
(13) Shattock and Dudgeon: (1912) Proc. Roy. Soc., **85**: 127.
(14) Swift: (1921) Jour. Exp. Med., **33**: 69.
(15) Reichel: Personal communication.
(16) Rake: (1935) Proc. Soc. Exp. Biol. & Med., **32**(6), 975.
(17) Macfadyen: (1899–1900) Proc. Royal Soc. London, **66**: 180, 339, 488. (1900) The Lancet, **1**: 849.
(18) Macfadyen and Rowland: (1902) Ann. Bot., **16**: 589.
(19) Francis: (1932) Pub. Health Rep., **47**(24), 1287. Quoted by Zinsser and Bayne-Jones, in Textbook of Bacteriology, p. 657.
(20) Ferry, Norton, and Steele: (1931) Jour. Immunol., **21**: 293.
(21) Elser and Huntoon: (1909) Jour. Med. Res., **20**: 377.
(22) Otten: (1929) Meded. v. d. dienst d. volksgezondh. in Ned.-Indie, **18**: 367.

DEATHS DURING WEEK ENDED MAY 11, 1935

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended May 11, 1935	Corresponding week, 1934
Data from 86 large cities of the United States:		
Total deaths	8,582	8,499
Deaths per 1,000 population, annual basis	12.0	11.8
Deaths under 1 year of age	587	639
Deaths under 1 year of age per 1,000 estimated live births	54	59
Deaths per 1,000 population, annual basis, first 19 weeks of year	12.6	12.5
Data from industrial insurance companies:		
Policies in force	67,734,320	67,788,091
Number of death claims	12,858	13,538
Death claims per 1,000 policies in force, annual rate	9.9	10.4
Death claims per 1,000 policies, first 19 weeks of year, annual rate	10.7	11.0

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for weeks ended May 18, 1935, and May 19, 1934

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 18, 1935, and May 19, 1934

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934
New England States:								
Maine	5	1	2	1	178	10	0	0
New Hampshire	----	----	----	----	5	79	0	0
Vermont	----	----	----	----	49	65	0	0
Massachusetts	4	11	----	----	423	1,251	0	0
Rhode Island	2	----	----	----	498	14	0	0
Connecticut	2	3	----	1	1,202	156	1	1
Middle Atlantic States:								
New York	39	56	[1]8	[1]6	2,876	1,089	35	2
New Jersey	30	15	11	27	2,166	817	3	1
Pennsylvania	23	61	----	----	3,438	4,014	2	4
East North Central States:								
Ohio	35	12	73	10	2,056	1,689	10	6
Indiana	20	9	14	12	229	1,391	6	1
Illinois	42	33	47	21	1,861	2,346	24	4
Michigan	11	14	1	2	4,217	322	0	2
Wisconsin	2	1	89	30	1,505	2,934	1	1
West North Central States:								
Minnesota	12	7	2	1	520	340	0	0
Iowa	9	11	8	----	331	368	2	3
Missouri	25	21	37	31	448	520	20	4
North Dakota	4	2	----	----	15	122	0	0
South Dakota	----	3	----	----	37	362	0	0
Nebraska	5	9	----	----	295	286	2	0
Kansas	6	8	4	2	821	641	1	0
South Atlantic States:								
Delaware	2	1	----	----	6	95	0	0
Maryland [2] [3]	6	4	8	4	73	2,275	9	0
District of Columbia	10	2	----	1	49	75	8	0
Virginia [2]	18	18	----	----	506	1,375	23	0
West Virginia	13	6	12	18	384	154	4	3
North Carolina [4]	23	15	9	11	150	1,223	3	1
South Carolina	2	1	72	158	13	300	0	0
Georgia [4]	3	5	----	----	----	385	1	0
Florida	2	3	3	----	23	320	0	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 18, 1935, and May 19, 1934—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934
East South Central States:								
Kentucky	7	4	24	8	283	369	2	0
Tennessee	6	3	18	54	18	220	7	5
Alabama [4]	8	3	26	29	122	834	0	1
Mississippi [3]	6	4	----	----	----	----	0	1
West South Central States:								
Arkansas	8	5	37	6	73	54	0	1
Louisiana [4]	17	14	6	6	56	205	1	0
Oklahoma [3]	2	6	65	26	67	175	1	1
Texas [4]	35	39	86	115	117	530	3	0
Mountain States:								
Montana [3]	5	2	45	6	592	97	0	1
Idaho [3]	----	1	3	----	2	34	1	0
Wyoming [3]	----	1	----	----	23	91	0	0
Colorado	8	6	----	----	405	590	0	0
New Mexico	1	2	9	----	9	164	0	0
Arizona	9	1	8	2	13	17	0	0
Utah [3]	1	2	----	----	1	83	0	0
Pacific States:								
Washington	7	4	----	----	524	132	2	1
Oregon [3]	3	----	15	24	210	75	2	0
California	24	34	47	26	1,714	746	5	0
Total	502	463	789	638	28,603	29,434	179	44
First 20 weeks of year	13,029	15,211	99,537	44,166	550,132	533,467	2,843	1,123

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934
New England States:								
Maine	0	0	9	13	0	0	1	4
New Hampshire	0	0	17	15	0	0	0	0
Vermont	0	0	2	11	0	0	1	3
Massachusetts	0	0	210	261	0	0	4	3
Rhode Island	0	0	19	18	0	0	0	0
Connecticut	0	0	104	59	0	0	1	1
Middle Atlantic States:								
New York	1	0	1,020	791	0	0	8	7
New Jersey	0	0	179	186	0	0	1	2
Pennsylvania	0	1	598	617	0	0	10	4
East North Central States:								
Ohio	0	0	638	478	0	0	7	5
Indiana	0	0	96	92	2	1	3	6
Illinois	0	0	1,131	544	2	1	7	5
Michigan	0	1	594	804	0	1	3	2
Wisconsin	1	0	467	741	17	21	1	1
West North Central States:								
Minnesota	0	0	364	65	3	7	1	2
Iowa	1	1	79	56	10	9	1	1
Missouri	0	0	34	55	4	16	5	17
North Dakota	0	0	43	58	1	2	0	0
South Dakota	0	0	25	13	2	1	0	0
Nebraska	0	0	56	26	17	9	0	0
Kansas	0	0	44	35	18	4	3	2
South Atlantic States:								
Delaware	0	0	10	3	0	0	0	0
Maryland [2]	0	0	103	50	0	0	5	10
District of Columbia	0	0	43	17	0	0	0	2
Virginia [3]	1	0	17	25	0	0	2	5
West Virginia	0	0	62	93	0	2	11	3
North Carolina [4]	2	0	17	17	0	0	1	1
South Carolina	0	0	3	2	0	0	12	16
Georgia [4]	0	0	6	4	0	0	14	20
Florida	1	0	1	----	0	0	6	3

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 18, 1935, and May 19, 1934—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934	Week ended May 18, 1935	Week ended May 19, 1934
East South Central States:								
Kentucky	0	0	21	31	0	0	8	5
Tennessee	1	0	16	15	0	0	3	4
Alabama [4]	0	0	7	9	3	0	6	6
Mississippi [3]	0	0	7	----	0	0	3	5
West South Central States:								
Arkansas	0	1	4	3	5	8	4	1
Louisiana [4]	4	0	2	10	0	1	13	19
Oklahoma [5]	1	0	6	2	0	4	0	1
Texas [4]	1	1	28	38	8	47	22	8
Mountain States:								
Montana [3]	0	0	6	3	8	2	1	0
Idaho [3]	0	2	8	1	0	1	0	0
Wyoming [3]	0	0	15	17	2	0	2	1
Colorado	0	0	167	23	0	1	1	0
New Mexico	0	0	5	14	0	0	3	2
Arizona	0	2	24	7	0	0	3	0
Utah [3]	0	0	131	7	0	1	0	0
Pacific States:								
Washington	2	1	48	56	34	0	1	3
Oregon [3]	0	0	15	32	8	0	5	4
California	3	36	241	180	11	1	9	18
Total	19	46	6,452	5,597	155	140	192	202
First 20 weeks of year	478	474	142,869	119,493	3,778	3,028	2,732	3,236

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Rocky Mountain spotted fever, week ended May 18, 1935, 11 cases, as follows: Maryland, 1; Virginia, 2; Montana, 3; Idaho, 2; Wyoming, 1; Oregon, 2.
[4] Typhus fever, week ended May 18, 1935, 23 cases, as follows: North Carolina, 4; Georgia, 4; Alabama, 4; Louisiana, 2; Texas, 9.
[5] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
April 1935										
Georgia	1	17	189	116	131	29	2	21	4	30
Idaho	1	1	19	----	105	----	0	25	2	2
Illinois	88	194	178	7	12,581	----	3	5,574	1	38
Iowa	16	45	15	----	3,393	----	0	370	22	3
Maryland	5	18	38	----	303	----	1	520	0	15
Michigan	13	43	8	2	25,808	----	4	1,507	1	17
Minnesota	6	49	7	----	2,604	----	4	1,488	25	9
New Jersey	11	79	55	1	7,412	----	5	799	0	6
New Mexico	2	18	43	1	144	2	2	66	14	10
Ohio	77	183	250	----	9,129	----	1	3,550	5	18
Oregon	9	15	171	----	951	----	0	226	11	4
Rhode Island	4	3	----	----	1,193	----	0	40	0	2
South Carolina	2	64	963	477	196	99	0	25	0	11
South Dakota	1	12	45	----	262	----	0	64	55	0
Texas	11	160	1,254	838	822	44	5	229	126	49
West Virginia	15	55	195	----	1,726	----	0	277	0	26

April 1935

Anthrax:	Cases
Georgia	1
Chicken pox:	
Georgia	235
Idaho	14
Illinois	1,746
Iowa	254
Maryland	764
Michigan	1,625
Minnesota	463
New Jersey	2,369
New Mexico	94
Ohio	2,120
Oregon	251
Rhode Island	102
South Carolina	103
South Dakota	34
Texas	822
West Virginia	119
Conjunctivitis:	
New Mexico	1
Dengue:	
Texas	6
Diarrhea:	
Maryland	8
South Carolina	309
Ohio (under 2 years)	8
Dysentery:	
Georgia (amoebic)	5
Georgia (bacillary)	19
Illinois (amoebic)	7
Illinois (amoebic carriers)	25
Iowa (bacillary)	1
Maryland (bacillary)	3
Michigan (amoebic)	4
Michigan (bacillary)	1
New Jersey (unspecified)	1
New Jersey (amoebic)	3
New Jersey (bacillary)	1
New Mexico (amoebic)	1
Ohio (amoebic)	2
Texas	60
Epidemic encephalitis:	
Illinois	18
Iowa	1
Michigan	3
Minnesota	1
New Jersey	5
Ohio	5
Oregon	1
South Carolina	6
Texas	4
Food poisoning:	
Ohio	12
German measles:	
Illinois	5,210
Iowa	479
Maryland	434
New Jersey	2,530
New Mexico	94
Ohio	4,164
Rhode Island	20
Hookworm disease:	
Georgia	692
South Carolina	78

April 1935—Continued

Impetigo contagiosa:	Cases
Illinois	1
Maryland	7
Oregon	34
Jaundice:	
Maryland	1
Oregon	1
Lead poisoning:	
Illinois	5
Michigan	5
Ohio	11
Mumps:	
Georgia	218
Idaho	3
Illinois	664
Iowa	1,381
Maryland	143
Michigan	1,393
New Jersey	928
New Mexico	144
Ohio	2,031
Oregon	764
Rhode Island	76
South Carolina	363
South Dakota	354
Texas	494
West Virginia	121
Ophthalmia neonatorum:	
Illinois	12
Maryland	1
Minnesota	1
New Jersey	2
Ohio	72
South Carolina	10
South Dakota	1
Paratyphoid fever:	
Georgia	1
Maryland	1
New Jersey	1
South Carolina	1
Texas	2
Puerperal septicemia:	
Illinois	9
New Mexico	5
Ohio	4
Oregon	1
Rabies in animals:	
Illinois	60
Maryland	4
New Jersey	10
New Mexico	1
Oregon	3
South Carolina	46
Rabies in man:	
Illinois	2
Michigan	2
Rocky Mountain spotted fever:	
Idaho	4
Oregon	8
Scabies:	
Oregon	22
Septic sore throat:	
Georgia	16
Illinois	8
Iowa	1
Maryland	25
Michigan	29

April 1935—Continued

Septic sore throat—Con.	Cases
New Mexico	9
Ohio	308
Oregon	10
Rhode Island	3
South Dakota	2
West Virginia	13
Tetanus:	
Illinois	4
Maryland	2
Michigan	1
New Jersey	2
Ohio	2
Trachoma:	
Illinois	61
Minnesota	2
New Jersey	3
Ohio	4
Oregon	2
South Dakota	2
Trichinosis:	
Illinois	3
Michigan	1
Minnesota	2
New Jersey	2
Ohio	1
Tularaemia:	
Georgia	6
Illinois	1
Ohio	3
Typhus fever:	
Georgia	13
Texas	15
Undulant fever:	
Georgia	7
Illinois	7
Iowa	6
Maryland	7
Michigan	7
Minnesota	10
New Jersey	2
Ohio	7
Oregon	2
Rhode Island	2
South Carolina	3
Texas	4
Vincent's infection:	
Illinois	13
Iowa	2
Maryland	6
Michigan	22
Oregon	8
Whooping cough:	
Georgia	109
Idaho	10
Illinois	1,034
Iowa	78
Maryland	153
Michigan	1,337
Minnesota	242
New Jersey	1,515
New Mexico	134
Ohio	690
Oregon	71
Rhode Island	41
South Carolina	258
South Dakota	32
Texas	424
West Virginia	165

CASES OF VENEREAL DISEASES REPORTED FOR MARCH 1935

This statement is published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State health officers. They are preliminary and are, therefore, subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

State	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama	362	1.34	49	0.18
Arizona	44	.97	129	2.85
Arkansas	343	1.83	152	.81
California	1,572	2.59	1,415	2.33
Colorado [1]				
Connecticut	179	1.09	118	.72
Delaware	149	6.18	30	1.24
District of Columbia	144	2.91	148	2.99
Florida	617	3.97	193	1.24
Georgia	1,213	4.17	855	2.94
Idaho	0		0	
Illinois	1,320	1.69	1,072	1.37
Indiana	245	.74	242	.74
Iowa [2]	121	.49	140	.56
Kansas	104	.55	65	.34
Kentucky	207	.78	273	1.03
Louisiana	166	.77	106	.49
Maine	40	.50	37	.46
Maryland	748	4.50	194	1.17
Massachusetts	556	1.29	513	1.19
Michigan	537	1.06	467	.93
Minnesota	311	1.20	289	1.11
Mississippi	1,065	5.20	1,775	8.67
Missouri	910	2.48	298	.81
Montana [3]	36	.67	39	.72
Nebraska	39	.28	52	.37
Nevada [1]				
New Hampshire	14	.30	11	.23
New Jersey	773	1.84	267	.64
New Mexico [2]	43	.99	23	.53
New York	5,992	4.62	1,500	1.16
North Carolina	1,344	4.10	433	1.32
North Dakota [3]				
Ohio	865	1.27	327	.48
Oklahoma [2]	177	.85	182	.87
Oregon	75	.76	65	.66
Pennsylvania	310	.32	217	.22
Rhode Island	95	1.35	57	.81
South Carolina [2]	318	1.82	431	2.47
South Dakota	4	.06	16	.23
Tennessee [2]	682	2.56	340	1.28
Texas	561	.93	152	.25
Utah [1]				
Vermont	19	.53	23	.64
Virginia [2]	393	1.61	264	1.08
Washington	181	1.13	207	1.29
West Virginia [3]				
Wisconsin [4]	11	.04	137	.46
Wyoming [1]				
Total	22,885	1.89	13,303	1.09

[1] Not reporting.
[2] Incomplete.
[3] Has been reporting regularly but no report received for current month.
[4] Only cases of syphilis in the infectious stage are reported.

NOTE.—Surveys in which all medical sources have been contacted in representative communities throughout the United States have revealed that the monthly rate per 10,000 population is 6.6 for syphilis and 10.2 for gonorrhea.

PLAGUE-INFECTED GROUND SQUIRRELS IN MODOC COUNTY, CALIF.

The director of public health of California has reported 7 plague-infected ground squirrels received at the laboratory May 9 and 16, 1935, from ranches in Modoc County, Calif., 4 miles south and 12 to 16 miles west of Alturas.

WEEKLY REPORTS FROM CITIES

City reports for week ended May 11, 1935

This table summarizes the reports received regularly from a selected list of 121 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference

State and city	Diphtheria, cases	Influenza		Measles, cases	Pneumonia, deaths	Scarlet fever, cases	Smallpox, cases	Tuberculosis, deaths	Typhoid fever, cases	Whooping cough, cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	------	0	2	6	0	0	0	0	3	31
New Hampshire:											
Concord	1	------	0	0	3	1	0	0	0	0	15
Manchester	0	------	0	0	3	0	0	0	0	0	18
Nashua	0	------	------	0	------	1	0	------	0	0	------
Vermont:											
Barre	0	------	0	4	0	0	0	0	0	0	1
Burlington	0	------	0	30	0	0	0	0	0	0	12
Massachusetts:											
Boston	1	------	1	57	7	44	0	11	1	14	212
Fall River	2	------	0	3	2	4	0	0	0	1	31
Springfield	0	------	0	122	2	13	0	1	0	6	33
Worcester	0	------	0	6	11	19	0	4	3	5	53
Rhode Island:											
Pawtucket	------	------	------	------	------	------	------	------	------	------	------
Providence	0	------	0	265	1	6	0	2	0	16	56
Connecticut:											
Bridgeport	0	------	0	3	3	9	0	2	0	0	35
Hartford	1	------	0	28	5	13	0	1	0	0	56
New Haven	0	------	0	376	2	1	0	0	0	0	40
New York:											
Buffalo	0	------	0	0	10	55	0	8	0	0	131
New York	29	10	5	1,595	184	655	0	114	3	238	1,607
Rochester	0	------	0	97	5	33	0	0	0	13	82
Syracuse	0	------	0	522	6	23	0	2	0	8	51
New Jersey:											
Camden	1	------	0	2	5	1	0	1	0	0	38
Newark	0	2	0	507	9	20	0	3	0	51	105
Trenton	0	------	0	1	2	9	0	1	0	1	30
Pennsylvania:											
Philadelphia	4	4	1	93	35	126	0	32	3	65	527
Pittsburgh	4	3	5	405	23	43	0	7	0	17	152
Reading	0	------	0	118	1	10	0	0	0	3	20
Scranton	0	------	------	10	------	3	0	------	0	2	------
Ohio:											
Cincinnati	4	------	2	11	10	23	0	7	0	4	152
Cleveland	4	27	1	468	30	61	0	17	0	39	214
Columbus	0	3	3	75	1	30	0	4	0	0	91
Toledo	2	2	2	172	9	16	0	4	0	9	67
Indiana:											
Fort Wayne	2	------	0	4	1	0	0	0	0	1	22
Indianapolis	4	------	0	105	20	15	0	0	0	24	104
South Bend	0	------	0	0	1	4	0	1	0	1	18
Terre Haute	0	------	0	0	0	0	0	1	0	0	18
Illinois:											
Chicago	31	3	1	1,262	62	655	0	49	0	61	705
Springfield	0	------	0	17	5	8	0	1	0	2	25
Michigan:											
Detroit	5	1	3	1,766	40	129	0	19	0	105	287
Flint	0	------	0	8	2	32	0	3	0	0	23
Grand Rapids	0	------	0	156	1	15	0	0	1	41	28
Wisconsin:											
Kenosha	0	------	0	15	0	15	1	0	0	2	5
Milwaukee	0	------	0	369	6	113	0	6	0	15	101
Racine	0	------	0	141	0	30	0	1	0	17	14
Superior	0	------	0	21	0	1	0	0	0	3	10

City reports for week ended May 11, 1935—Continued

State and city	Diphtheria, cases	Influenza		Measles, cases	Pneumonia, deaths	Scarlet fever, cases	Smallpox, cases	Tuberculosis, deaths	Typhoid fever, cases	Whooping cough, cases	Deaths, all causes
		Cases	Deaths								
Minnesota:											
Duluth	0	----	0	115	1	3	0	0	0	1	19
Minneapolis	10	----	0	104	9	144	0	0	0	34	121
St. Paul	6	----	0	15	5	64	0	0	1	7	66
Iowa:											
Davenport	0	----	----	1	----	4	0	----	0	0	----
Des Moines	0	----	----	298	----	2	0	----	0	2	40
Sioux City	1	----	0	0	0	1	0	0	0	5	2
Waterloo	3	----	0	1	0	11	0	0	0	0	----
Missouri:											
Kansas City	3	----	0	69	9	15	1	8	0	0	98
St. Joseph	0	----	1	5	4	1	0	0	0	1	19
St. Louis	6	----	1	15	10	20	0	10	0	6	201
North Dakota:											
Fargo	0	----	0	2	2	11	0	0	0	1	8
Grand Forks	0	----	----	0	----	0	0	----	0	0	----
South Dakota:											
Aberdeen	0	----	----	8	----	0	0	----	0	1	----
Nebraska:											
Omaha	2	----	0	66	10	11	0	4	0	0	66
Kansas:											
Topeka	----	----	----	----	----	----	----	----	----	----	----
Wichita	0	----	0	43	3	2	0	1	0	2	32
Delaware:											
Wilmington	0	----	0	9	3	3	0	0	0	0	25
Maryland:											
Baltimore	1	3	0	36	18	55	0	10	0	11	204
Cumberland	0	1	1	3	0	2	0	0	0	0	13
Frederick	0	----	0	0	1	0	0	0	0	0	2
District of Columbia:											
Washington	8	1	1	73	11	64	0	18	0	1	162
Virginia:											
Lynchburg	1	----	0	6	2	1	0	2	0	24	17
Richmond	0	----	2	40	5	4	0	3	1	0	55
Roanoke	1	----	0	26	2	0	0	0	0	7	11
West Virginia:											
Charleston	1	----	0	9	1	0	0	1	0	0	14
Huntington	1	----	----	13	----	4	0	----	0	0	----
Wheeling	0	----	0	44	3	3	0	0	0	1	21
North Carolina:											
Raleigh	0	----	0	5	3	0	0	2	0	3	16
Wilmington	0	----	0	0	0	0	0	1	0	1	13
Winston - Salem	0	----	0	2	0	0	0	1	0	9	18
South Carolina:											
Charleston	0	5	0	0	0	0	0	5	0	3	22
Columbia	0	----	0	0	1	0	0	0	0	0	12
Greenville	0	----	0	2	2	0	0	0	0	0	15
Georgia:											
Atlanta	8	6	3	1	7	4	0	3	0	2	99
Brunswick	0	----	0	0	0	0	0	0	0	6	7
Savannah	0	----	0	1	2	0	0	1	2	0	27
Florida:											
Miami	2	----	0	1	2	2	0	2	0	4	23
Tampa	2	----	0	29	2	0	0	1	0	0	20
Kentucky:											
Ashland	----	----	----	----	----	----	----	----	----	----	----
Lexington	0	----	----	15	----	0	0	----	0	0	19
Louisville	7	6	0	326	12	29	0	3	0	10	70
Tennessee:											
Memphis	2	----	2	0	4	2	0	4	0	12	84
Nashville	0	----	0	0	4	4	0	3	0	7	46
Alabama:											
Birmingham	0	4	0	61	6	1	0	5	1	5	59
Mobile	2	----	0	3	1	0	0	2	1	0	16
Montgomery	2	----	0	1	0	0	0	0	0	1	----
Arkansas:											
Fort Smith	----	----	----	----	----	----	----	----	----	----	----
Little Rock	0	----	1	7	2	3	0	0	0	20	6
Louisiana:											
New Orleans	13	1	1	36	8	5	0	10	1	1	126
Shreveport	0	----	0	13	5	0	0	4	1	0	35

City reports for week ended May 11, 1935—Continued

State and city	Diphtheria, cases	Influenza		Measles, cases	Pneumonia, deaths	Scarlet fever, cases	Smallpox, cases	Tuberculosis, deaths	Typhoid fever, cases	Whooping cough, cases	Deaths, all causes
		Cases	Deaths								
Texas:											
Dallas	1		0	0	4	3	0	5	0	0	60
Fort Worth	1		0		3	1	0	4	0	2	42
Galveston	0		0	0	1	0	0	0	0	0	18
Houston	11		0	2	6	0	1	2	1	0	62
San Antonio	4		2	0	4	0	0	7	0	0	62
Montana:											
Billings											
Great Falls	0		0	9	5	2	0	0	0	15	15
Helena	0		0	1	0	0	0	0	0	21	6
Missoula	0		0	17	0	0	0	0	0	0	6
Idaho:											
Boise	1		0	6	2	0	0	0	0	0	7
Colorado:											
Denver	6	31	0	207	4	97	1	5	1	3	89
Pueblo	0		0	66	3	3	0	1	0	1	15
New Mexico:											
Albuquerque	0		0	7	2	1	0	5	0	0	14
Utah:											
Salt Lake City	2		1	9	2	90	0	0	0	89	43
Nevada:											
Reno	0		0	2	0	0	0	0	0	0	3
Washington:											
Seattle	0		0	183	4	19	1	5	0	6	97
Spokane	0		0	72	5	4	0	1	0	2	31
Tacoma	0		0	7	2	7	8	0	1	1	26
Oregon:											
Portland	0		0	103	8	16	0	2	0	1	89
Salem	0	4		3		2	1		0	0	
California:											
Los Angeles	10	17	6	88	12	49	7	14	0	16	334
Sacramento	0		0	275	2	11	4	1	0	0	27
San Francisco	0		0	49	8	21	0	6	2	28	163

State and city	Meningococcus meningitis		Poliomyelitis cases	State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Rhode Island:				Missouri:			
Providence	1	1	0	St. Joseph	1	0	0
New York:				St. Louis	3	0	0
New York	18	9	4	Nebraska:			
Pennsylvania:				Omaha	1	0	0
Philadelphia	2	1	0	Maryland:			
Ohio:				Baltimore	9	3	0
Cincinnati	12	6	0	District of Columbia:			
Cleveland	1	1	0	Washington	11	5	0
Columbus	1	0	0	Virginia:			
Toledo	1	0	0	Lynchburg	0	1	0
Indiana:				Georgia:			
Indianapolis	3	0	0	Atlanta	2	0	0
Terre Haute	0	1	0	Kentucky:			
Illinois:				Louisville	2	0	0
Chicago	10	2	0	Tennessee:			
Michigan:				Memphis	2	0	0
Detroit	0	1	0	Arkansas:			
Wisconsin:				Little Rock	0	1	1
Milwaukee	0	0	1	Louisiana:			
Minnesota:				New Orleans	0	0	1
Minneapolis	0	1	0	California:			
Iowa:				Los Angeles	3	0	4
Sioux City	2	2	0	San Francisco	1	1	0

Epidemic encephalitis.—Cases: New York, 1; Columbus, 1; St. Louis, 2.
Pellagra.—Cases: Washington, 1; Charleston, S. C., 5; Atlanta, 1; New Orleans, 4; Los Angeles, 1.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—2 weeks ended April 20, 1935.—During the 2 weeks ended April 20, 1935, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada, as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis			2	1	3	1				7
Chicken pox		2	4	265	407	56	49	28	145	956
Diphtheria		8	1	22	7	11	5	2	3	59
Dysentery				8						8
Erysipelas				7	3	2	2	4	1	19
Influenza		75		23	34	5	7		298	442
Lethargic encephalitis		1						1		2
Measles		117	109	1,419	5,426	191	136	10	124	7,532
Mumps		38	1		460	99	3	35	47	683
Paratyphoid fever					1					1
Pneumonia		3			42		6		21	72
Poliomyelitis					1					1
Scarlet fever		39	9	200	200	15	17	26	37	603
Tuberculosis	2	5	28	112	78	32	3	7	20	287
Typhoid fever			1	24	3	1				29
Undulant fever				1	6	1	1			9
Whooping cough			16	89	304	93	95	26	81	704

CEYLON [1]

Malaria.[2]—The malaria epidemic in Ceylon, which began in October 1934, reached its peak in the third week of December; and it is estimated that, by the second week of the latter month, 500,000 persons had been attacked. The area affected was within the southwest quadrant (wet zone) of the island, the most densely populated part, comprising one-fifth the area but with 3,500,000 people out of a total population of 5,500,000. During 1934 a prolonged drought prevailed over a large part of this area. The drying up of the streams provided ideal conditions for the breeding of *Anopheles culicifacies*, which transmitted the infection; 21 percent of this species collected from the houses of one area were found to harbor oocysts or sporozoites. *Plasmodium vivax* was the predominating parasite.

[1] For earlier reports on the malaria outbreak in Ceylon see pp. 34, 113, 356, 499, and 631 of prior issues of the PUBLIC HEALTH REPORTS.

[2] From extracts of a report of the director of medical and sanitary services, Ceylon, published in the annual report (1934) of the director of the eastern bureau of the health organization of the League of Nations, Singapore.

The case fatality rate generally was not high, considering the intensity of the epidemic. Among 2,223 hospitalized patients in the Kegalla district the rate was 2.87 percent; but in a hospital in Colombo, with a preponderance of subtertian malaria, the rate among 1,200 admissions was 6.75 percent. No infections were recorded at altitudes above 2,400 feet.

The common complications were (1) a dysenteric form of diarrhea, which yielded to quinine therapy; (2) convulsions in children; and (3) edema of the face and feet, during convalescence, especially in ill-nourished children. This latter condition was very prevalent and is under investigation.

The measures adopted were (1) mass treatment by quinine and (2) the supplying of food where destitution and malaria coexisted. The standard treatment for adults was 7½ grains of quinine sulphate or bisulphate in solution 3 times a day. Plasmochin and atabrine were used extensively in hospitals, but not in dispensaries or for mass treatment. Drug prophylaxis was not attempted on a large scale. Antilarval measures were intensified in Colombo and other towns but could not be applied in the rural areas.

CUBA

Habana—Communicable diseases—4 weeks ended May 11, 1935.—During the 4 weeks ended May 11, 1935, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	1		Tuberculosis	43	10
Malaria	[1] 14		Typhoid fever	[1] 6	3
Poliomyelitis	[1] 2				

[1] Includes imported cases.

Provinces—Notifiable diseases—4 weeks ended May 4, 1935.—During the 4 weeks ended May 4, 1935, cases of notifiable diseases were reported in the Provinces of Cuba, as follows:

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer				3		1	4
Chicken pox		1		2			3
Diphtheria	1		1	6			8
Hookworm disease				4			4
Leprosy				6			6
Malaria	133	1	35	191	35	219	614
Measles	21	15	4	18	2	4	64
Poliomyelitis			1	4			5
Scarlet fever			1	1			2
Tuberculosis	4	10	23	43	18	26	124
Typhoid fever		11	7	22	24	19	83

ITALY

Communicable diseases—4 weeks ended March 31, 1935.—During the 4 weeks ended March 31, 1935, cases of certain communicable diseases were reported in Italy, as follows:

Disease	Mar. 4–10		Mar. 11–17		Mar. 18–24		Mar. 25–31	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax	5	5	5	5	4	4	8	6
Cerebrospinal meningitis	19	15	20	17	28	22	15	13
Chicken pox	312	119	449	123	379	114	438	136
Diphtheria and croup	460	289	547	280	550	289	563	287
Dysentery	1	1	3	3	4	4	3	3
Lethargic encephalitis	3	3	6	6	3	3	2	2
Measles	2,782	337	3,709	325	3,149	372	3,427	357
Poliomyelitis	4	4	7	7	4	4	3	3
Scarlet fever	229	108	230	88	282	118	330	110
Typhoid fever	166	98	160	109	169	106	166	115

PERU

Callao—Plague.—A report dated May 3, 1935, states that according to the Director General of Public Health, Ministry of Public Works, in Lima, Peru, the last case of human plague in the port of Callao occurred during the latter part of March 1935.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Dec. 30, 1934–Jan. 26, 1935	Week ended— February 1935 2	9	16	23	March 1935 2	9	16	23	30	April 1935 6	13	20	27
Ceylon:																		
Colombo	C							16	6	4	1							
	D							12	5	3								
Peliyagoda	C							10	12									
	D							6	11									
India	C	19,160	16,176	17,836	16,371	3,643	3,428	3,721	3,821	3,370	3,568	3,358	4,557					
	D	9,524	8,559	8,452	8,582	1,949	1,828	1,987	1,932	1,719	1,913	1,741	2,298					
Assam	C	43	327	645	874	37	20	45	25	47	40	51	87	105	354	435	633	616
	D		133	274	419	37	9	24	12	22	21	25	42	59	157	270	361	416
Bassein	C			15	8	1	1	2	2	3				1	1	3	2	15
	D			9	9		1	2	1	1	1				1	3	1	9
Bombay Presidency	C	1,973	872	592	90	19	18	25	88	74	32	32	48	48		13	51	
	D	925	383	256	45	8	7	12	32	37	12	17	18	14		8	29	
Bombay	C										6							1
Calcutta	C	110	78	166	174	96	151		197	154	186	154	157	187	151	163	206	262
Chittagong	C	1	1	12				2	2	3	3			9	7		9	3
Madras Presidency	C	1,098	1,901	5,157	7,693	2,142	1,696	1,380	1,255	875	843	696	691	633				
	D	526	895	2,469	4,115	1,116	866	728	630	473	413	360	363	318				
Madras	C	7	59	28	25	3	2	1		1		1	1			1		1
	D	5	32	12	17	1	1	1					1					
Porto Novo	C			P														
Mergui	C						2											
Moulmein	C				1	7		11	8	4	2		[1] 2			4	[1] 2	
Negapatam	C		1		12		1		1	1	2		9	2	3	5		2
Rangoon	C			1	21	10	7	10	7		2	3	3	[1] 1	7	3	3	3
Tuticorin	C				1									[1] 1	18		14	5
India (French):																		
Chandernagor	C	1								1				16	14			
Karikal	C	5	2	11	55	15	2	9	2	5	8	2	2					
Pondichery	C		10	29	50	4	4	13	6	2		1	4	2	2			
India (Portuguese)	C			16														

[1] Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Dec. 30, 1934–Jan. 26, 1935	Week ended— February 1935: 2	9	16	23	March 1935: 2	9	16	23	30	April 1935: 6	13	20	27
Indo-China (see also table below):																		
Kandal	C				2													
Pnom-Penh	C			2			1							1				
Siam:																		
Bangkok	C										1							
Nagara Rajsima—Roy Ech	C									13								
	D									2								
On vessels:																		
S. S. *Ellenga* at Rangoon from Calcutta	C				1													
S. S. *Tilawa* at Cocanada	C						[2]1											
S. S. *Egra* at Rangoon	C				[2]1													
S. S. *Santhia* at Rangoon from Calcutta	C								1									
S. S. *Incomati* at Colombo	C											1						
	D											1						
S. S. *Pasha* at Rangoon from Moulmein	C										1							
S. S. *Khandalla* at Rangoon	C											1						
S. S. *Juna* at Moulmein from Mergui	C											1						
S. S. *Karoa* at Rangoon	C											1						

Place		November 1934: 1–10	11–20	21–30	December 1934: 1–10	11–20	21–31	January 1935: 1–10	11–20	21–31	February 1935: 1–10	11–20	21–28	March 1935: 1–10	11–20	21–31
Indo-China (French) (see also table above):																
Cambodia [1]	C	3								2	1	3		3		1
	D	3								2	1	3		3		1
Cochin-China [1]	C	1	2						1			2		2	1	1
	D	1	2						1			1		2	1	1

[1] Imported. [2] Suspected. [3] Reports incomplete.

PLAGUE [1]—Continued

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Dec. 30, 1934–Jan. 26, 1935	Week ended— February 1935				March 1935					April 1935			
						2	9	16	23	2	9	16	23	30	6	13	20	27
Argentina (see also table below): Santiago de Estero Province—Frias	C			1														
Azores. (See table below.)																		
Belgian Congo	C		14		4								P					
Bolivia: Tomina Province. (See table below.)																		
Brazil:																		
Alagoas State	C			5														
	D			2														
Ceara State	C			2														
British East Africa (see also table below):																		
Kenya	C	1	5	4								1		1				
Tanganyika	C													1				
Uganda	C	89	79	122	79	9	16	10	15	4	11	2	10		20	15	25	
	D	85	75	114	76	9	16	10	14	4	11	2	10		19	14	23	
Canary Islands: Las Palmas	C				1													
Ceylon: Colombo	C		2	1		1	1			2	2	1					1	
	D		2	1			2			2	2						1	
Plague-infected rats			3									4			5	8	1	1
China (see also table below):																		
Amoy	C									[2] 1								
Kangping.[3]																		
Manchuria.[4]																		
Mansantun [5]	D			4														

[1] Including plague in the United States and its possessions.

[2] Imported.

[3] A report dated Jan. 29, 1935, states that up to Jan. 23, 79 cases of plague with 78 deaths were reported near Kangping, China; the report also states that up to Jan. 21, 50 deaths from plague were reported in 6 villages of the Pe Wang Fu District, northwest of Kangping.

[4] A report dated Oct. 30, 1934, states that from June to Oct. 25, 1934, deaths from plague had been reported in Manchuria, China, as follows: Fengtien Province—Liaoyuan 30, Shuangshan 21, Tungliao 41, Kirin Province—Changling 12, Chienan 26, Fuyu 32, Hsinking City 1, Nungan 168.

[5] Up to Jan. 5, 1935, 44 cases of plague with 35 deaths were reported at Mansantun, Manchuria, China.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Dec. 30, 1934–Jan. 26, 1935	Week ended— February 1935 2	9	16	23	March 1935 2	9	16	23	30	April 1935 6	13	20	27
Dutch East Indies:																		
Cheribon	C								[1]1									
Java—Batavia	C	5																
	D	5																
West Java	C	1,684	1,658	2,905	2,425	515	508	422	350	340								
	D	1,684	1,658	2,900	2,425	514	508	422	350	340								
Ecuador (see also table below):																		
Celica	C							[1]16										
Pungala and Tixan (near)	C							[1]14										
Egypt:																		
Alexandria [2]—Plague-infected rats		P	P	P	P	P		P		P		P		P		P		
Asyut	C		2							1				2		1		3
Beni-Suef	C		1															
Girga	C				1	1								1				
Hawaii Territory:																		
Hawaii Island—Hamakua district [3]—																		
Kalopa—Plague-infected rats		1	3															
Pauuhau	C		1										1					
	D		1											1				
Plague-infected rats		1												2				
Pohakea—Plague-infected rats		1																1
Maui Island—Makawao district—																		
Kahului (9–10 miles from)—Plague-infected rats		2									1	1						1
Paia—Plague-infected rats		1																
India	C	5,642	4,167	4,549	5,852	1,279	1,545	1,628	2,411	1,713	1,915	1,528	1,966					
	D	3,114	2,424	2,875	3,503	706	945	851	1,380	990	1,031	955	1,094					
Bassein	C	2	3	1			1					2	2	2	5	1	2	
Plague-infected rats		1										1						
Bombay Presidency	C	2,759	2,093	1,331	1,074	360	262	266	345	209	268	192	142	163		96	64	
	D	1,626	1,109	823	603	179	129	167	211	114	144	122	72	96		52	25	
Bombay	C				1													
Plague-infected rats		1																
Madras Presidency	C	309	230	258	237	65	38	39	19	25	36	23	12	16				
	D	183	92	127	119	35	16	30	15	10	19	14	6	5				
Mandalay	C					2												

Moulmein	C										[8]1					1	1	
	D										[8]1							
Northwest Frontier Province	C											15						
	D											7						
Punjab	C	29	53	59	32	14	18	85	30	74	37	51	62	119	50	88	138	158
	D	17	35	45	19	9	10	25	17	39	18	33	27	78	18	42	63	100
Rangoon	C				1		[8]1					1					1	
Plague-infected rats				1								1						
Indo-China (see also table below):																		
Bentre	C									1								
Haiphong	C																	1
Kandal	C				1													
Pnom-Penh	C	2	1	2														
Saigon and Cholon	C		2															
Tanghai Island	C															12		
Madagascar. (See table below.)																		
Morocco:																		
Saffi Region	C													9		7	4	3
	D													5	2	5	2	2
Tangier	C		7															
Peru. (See table below.)																		
Senegal. (See table below.)																		
Siam:																		
Prachin—Nagara Nayok	C			4														
Nagara Rajsima	C							1										
Rajpuri	C				1					1								
South-West Africa. [9]																		
Tunisia: Tunis—Plague-infected rats									1									
Union of South Africa:																		
Cape Province	C				3	3												
Orange Free State	C	3	3	3		[10]39												
United States: California—Plague-infested ground squirrels—																		
Modoc County [11]																		3
San Luis Obispo County																		1

[8] Imported.
[9] For 2 weeks.
[7] During the week ended May 11, 1935, 1 case of bubonic plague was reported at Alexandria, Egypt.
[8] On May 8, 1935, 1 plague-infected rat was found at Hamakua District, Hawaii Island, Hawaii Territory.
[9] During the months of January and February 1935, 88 cases of plague with 16 deaths were reported in Ovamboland, South-West Africa.
[10] For 4 weeks.
[11] For the period Apr. 28 to May 16, 1935, 18 plague-infected ground squirrels were reported in Modoc County, Calif.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		October 1934	November 1934	December 1934	January 1935	February 1935	March 1935
Argentina (see also table above): Santa Fe	C					1	1
Azores	C		1	1	2	3	
Bolivia: Tomina Province	C				4	4	4
British East Africa (see also table above): Kenya	C	1	6				
China: Kwangchowan	C		3				
	D		3				
Ecuador:							
Chimborazo Province	C					4	
Loja Province	C					18	17
Indo-China (see also table above):							
Cambodia	D	4	4	2	1		
Cochin-China	C		2				1
Naotchao Island	C						20
Madagascar (central region)	C	444	431	381	510	491	211
	D	422	410	364	502	472	203
Peru	C		2	5	5	15	14
Lima department	C	3	1	1	1	6	5
Senegal:							
Dakar [13]	C	13	4	2	2	1	2
	D	11	3	2	2	1	2
Rufisque [13]	C	8	4		1		
Theis [13]	C	6					
Tivaouane [13]	C	21	3	1			

[13] Reports incomplete.

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Dec. 30, 1934–Jan. 26, 1935	Week ended— February 1935 2	9	16	23	March 1935 2	9	16	23	30	April 1935 6	13	20	27
Algeria:																		
Algiers Department	C	1					1						2					
Constantine Department	C	1																
Belgian Congo (see also table below)	C		102		5													
Bolivia. (See table below.)																		
Brazil:																		
Porto Alegre (alastrim)	C	1																
Recife	C			1														
Sergipe State	C		P															
British East Africa:																		
Kenya	C	30	17	13				3				15		11	3			
Tanganyika	C	18	14	63	2			10	8	2	2	8	7	7	5	9		
British Somaliland	C	7	5		8	11												
British South Africa:																		
Northern Rhodesia	C							25				27						
Southern Rhodesia	C	2		1														
Canada:																		
Alberta	C		2	1														
Manitoba	C	[1] 1																
Ontario	C						[1] 1		[1] 1						2			
Saskatchewan	C	2	1												[1] 1			
Canary Islands: Santa Cruz de Tenerife	C			3														
Ceylon:																		
Colombo	C	3	11	12	15	1												
Galle	C											13	1					
Welitara	C									11	15	22	2					
China:																		
Amoy	C		1		1						1		5	1	2			
Canton	C		3	9	7	3	1	2		2	1	4	3	2		1		
Dairen	C			2	4		1			2			2					
Foochow	C	P	P	P	P		P		P		P		P		P		P	
Hankow	C	1	1	16	19	10	2	1	2	2	2	8	1	1	3	1		
Hong Kong	C		2	2	8	1	5	2	1	6	3	2	1	2	1	2	3	6
Macao	D		3	43	47	12	12	26	9	7	8	5	1	2	1	1		
Nanking	C			1	1	1					1	2	2					

[1] For 2 weeks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Dec. 30, 1934–Jan. 26, 1935	Week ended— February 1935				March 1935					April 1935			
						2	9	16	23	2	9	16	23	30	6	13	20	27
China—Continued.																		
Shanghai	C	2	1	8	-------	2	1	-------	1	1	-------	-------	1	3	1	-------	1	1
Swatow	C	-------	-------	-------	-------	-------	-------	1	-------	-------	-------	-------	1	1	-------	-------	-------	-------
Tientsin	C	2	3	7	6	3	-------	6	2	2	4	2	1	-------	5	-------	-------	-------
Tsingtao	C	1	3	2	11	-------	6	11	-------	3	7	1	5	-------	4	-------	-------	-------
Chosen. (See table below.)																		
Colombia	C	-------	-------	-------	11	20	1	-------	2	-------	5	-------	2	1	12	4	-------	-------
Dahomey. (See table below.)																		
Dutch East Indies: Balei	C	-------	-------	-------	4	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Egypt:																		
Dakahliya	C	-------	-------	-------	-------	56	18	13	-------	1	-------	-------	2	1	-------	2	15	-------
Gharbiya	C	-------	-------	-------	-------	-------	-------	-------	-------	3	-------	-------	-------	-------	-------	-------	-------	-------
Sharkiya	C	74	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Suez	C	-------	-------	-------	-------	-------	-------	-------	-------	[2]1	-------	-------	-------	-------	-------	-------	-------	-------
Provinces	C	46	3	2	4	-------	-------	-------	3	6	-------	6	9	-------	-------	-------	-------	-------
Formosa	C	-------	-------	-------	P	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
France. (See table below.)																		
French Somaliland	C	-------	-------	-------	11	6	6	2	2	2	6	5	-------	1	1	-------	-------	-------
Great Britain:																		
England and Wales	C	1	1	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
London	C	1	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
London and Great Towns	C	1	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Greece: Salonika	C	3	-------	-------	1	-------	-------	1	1	1	1	1	1	1	1	-------	-------	-------
Guatemala. (See table below.)																		
Honduras: Tela	C	-------	-------	7	2	-------	[1]5	-------	[1]3	-------	-------	-------	-------	-------	-------	-------	6	-------
India	C	4,421	7,163	17,082	23,522	7,336	8,195	7,388	8,614	8,104	8,745	9,173	9,246	-------	-------	-------	-------	-------
	D	846	1,431	4,189	5,444	1,577	1,761	1,604	1,784	1,648	1,756	1,891	1,753	-------	-------	-------	-------	-------
Assam	C	-------	-------	-------	27	3	5	-------	19	9	12	6	3	17	13	4	4	11
Bassein	C	-------	-------	-------	1	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
	D	-------	-------	-------	2	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Bombay Presidency	C	628	1,245	2,834	4,816	1,879	1,979	2,050	1,870	2,222	2,128	2,456	2,053	2,834	-------	2,739	2,531	-------
	D	132	204	578	1,019	387	361	348	349	412	427	486	386	530	-------	506	455	-------
Bombay	C	8	5	18	87	56	46	75	58	59	81	91	91	119	109	111	119	116
	D	5	4	11	41	35	22	25	32	28	44	60	57	73	61	65	59	72

Calcutta	C	3	4	51	79	20	42	35	73	58	92	74	86	149	125	52	104	182
	D		1	32	52	16	25	17	45	34	47	47	38	80	110	43	69	104
Chittagong	C							[1] 1		[2] 2								
Cochin	C				2	4			2			3	1	1	2			
Karachi	C			7	11	4	8	9	11	8	10	8	11	2	12	10	10	11
Madras Presidency	C	2,708	2,753	2,727	5,324	1,389	1,415	1,041	1,094	1,246	1,196	1,149	1,284	1,218				
	D	414	446	408	851	233	241	195	166	180	185	205	216	186				
Madras	C	16	5	19	36	14	11	16	7	5	17	10	7	10	15	18	5	9
Moulmein	C							[1] 1					1	1				
Negapatam	C	8	3	24	33	10	14	8	11	12	21	8	9	11	5	10	2	3
Punjab	C	5	60	275	279	52	41	64	36	38	58	69	19	28	30	31	31	41
Rangoon	C	3	3	3	24	8	34	27	8	43	75	24	41	33	35	15	25	20
Tuticorin	C	2		3	4									1		28		
Vizagapatam	C		16	28	92	29	38	23	43	36	21	21	36	30	42	27	18	32
India (French):																		
Chandernagor	C					1				2				4	14			
Karikal	C	1	1	13	14		3		8	4	1		5	4	7			
Mahe	D		3															
Pondichery	C	99	89	132	91	25	24	17	12	17	13	23	32	25	15			
	D	81	45	99	70	20	24	16	12	16	13	20	26	16	15			
Indo-China (see also table below):																		
Haiphong	C				1						1	2				1	2	1
Pnom-Penh	C										3	1	1	3				
Saigon and Cholon	C																	2
Tourane	C	4	3	5	2		1	1	3		4	2						
Iran	C	7	4	1	4	3		1	3			1						
Teheran	C		2	2														
	D	1	1															
Iraq	C	3	1	33	34	2			5		3	1	2		1	6		
Arbil	C	2		3	1	2	2									2		
Baghdad	C	1																
Basra	C			6												1	1	
Mosul liwa	C				9					6		1	2			1		
Japan (see also table below)	C		1	141														
Kobe	C						1											
Nagasaki	C							1		3								
Taiwan	D			2														
Lithuania. (See table below.)																		
Mexico:																		
Allende.[3]																		
Chihuahua	C		2	17	7		1	5	2	3			15		[1] 1			[4] 10
Mazatlan	C													1				1
Mexico, D. F	C	6		7	37	24	31	36	17									
Monterrey	C									1								2
San Luis Potosi	D			1														1
Vera Cruz	C												[1] 1					

[1] For 2 weeks.
[2] Imported.
[3] A report dated Dec. 28, 1934, states that about 48 cases of smallpox with 5 or 6 deaths had been reported at Allende, Mexico.
[4] For 3 weeks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Dec. 30, 1934–Jan. 26, 1935	Week ended— February 1935 2	9	16	23	March 1935 2	9	16	23	30	April 1935 6	13	20	27
Morocco. (See table below.)																		
Mozambique. (See table below.)																		
Nigeria	C	159	115	328	78	56	171	78	67	34	50							
Lagos	C							1										
Nyasaland. (See table below.)																		
Palestine	C			1	2		4						2					
Peru. (See table below.)																		
Poland	C	1	1											1				
Portugal (see also table below):																		
Lisbon	C	2	2	1						3		1	1		1	1		
Oporto	C		1	1														
Portuguese East Africa. (See table below.)																		
Salvador	C	13	10	28	88													
Siam	C	4	13	20	24		1		1									
Bangkok	C				[2] 1		1											
Sierra Leone	C	214	[1] 60	172	111	[1] 133		[1] 162		[1] 95		[1] 19		[1] 9		[1] 19		
Spain	C	22	105	78	16		3	8	4	13		4	9	8	6	3		
Straits Settlements: Singapore	C	2																7
Sudan (Anglo-Egyptian)	C	1		12	13	5	2	1	1			4	1	3	12	1	8	2
Syria:																		
Damascus	C		33	49	6	2												
Provinces	C	51	116	114	28	3	1				2							
Trans-Jordan	C		[2] 1															
Tunisia	C				5													
Turkey. (See table below.)																		
Union of Soviet Socialist Republics. (See table below.)																		

[1] For 2 weeks.
[2] Imported.

On vessels:

S. S. *Rhona* at Penang from Madras	1 case	Oct.	4, 1934
S. S. *Erinpura* at Rangoon from Madras	1 case	Oct.	8, 1934
S. S. *Kwang-Si* at Jibuti	1 case	Nov.	24, 1934
S. S. *Varela* at Basra	1 case	Dec.	8, 1934
S. S. *Talma* at Hong Kong	1 case	Jan.	19, 1935
S. S. *Chilka* at Rangoon from Gopalpore	1 case	Jan.	23, 1935
S. S. *Aorangi* at Sydney from Vancouver	1 case	Jan.	24, 1935
S. S. *Hosang* at Singapore from Osaka	1 case	Feb.	2, 1935
S. S. *Rhona* at Port Swettenham from Madras	1 case	Feb.	22, 1935
S. S. *Mongolia* at Suez from Australia	1 case	Feb.	24, 1935
S. S. *Ellenga* at Rangoon	1 case	Feb.	26, 1935
S. S. *Suisang* at Singapore from Hong Kong	1 case	Feb.	27, 1935
S. S. *Empress of Britain* at Singapore from Bombay	1 case	Mar.	3, 1935
S. S. *Cremer* at Singapore from Amoy	1 case	Mar.	11, 1935

On vessels—Continued.

S. S. *Kutsang* at Hong Kong	1 case	Mar.	14, 1935
S. S. *Tatsuta Maru* at San Francisco	1 case	Mar.	14, 1935
S. S. *Tatsuta Maru* at San Francisco	1 case	Mar.	15, 1935
S. S. *Pendeen* at Port Said from Odessa	1 case	Mar.	16, 1935
S. S. *Anhui* at Singapore from Hong Kong	2 cases	Mar.	22, 1935
S. S. *Van Heutsz* at Singapore from Amoy	1 case	Mar.	26, 1935
S. S. *Mulbera* at Aden	1 case	Mar.	28, 1935
S. S. *Anshun* at Swatow from Hong Kong	1 case	Mar.	28, 1935
S. S. *Varsova* at Karachi	1 case	Mar.	30, 1935
S. S. *Jinkai Maru* at Singapore from Miike	1 case	Apr.	3, 1935
S. S. *Ipoh* at Penang from Singapore	1 case	Apr.	12, 1935
S. S. *Hong Peng* at Singapore from Amoy	1 case	Apr.	17, 1935
S. S. *Anhui* at Singapore from Hong Kong	1 case	Apr.	18, 1935

Place		October 1934	November 1934	December 1934	January 1935	February 1935	March 1935
Belgian Congo (see also table above)	C	184	110	----------	109	58	----------
Bolivia	C	72	53	35	52	42	42
Chosen	C	40	38	15	159	179	----------
Dahomey	C	6	1	----------	3	4	----------
France	C	3	53	57	31	137	78
Guatemala	C	2	1	2	----------	2	1
Indo-China (see also table above)	C	202	259	250	605	582	601
	D	39	22	25	67	69	53
Japan (see also table above)	C	----------	----------	----------	21	8	----------
Lithuania	C	----------	----------	1	----------	----------	----------
Morocco	C	----------	7	5	----------	----------	3
Mozambique	C	1	36	----------	3	----------	----------
Nyasaland	C	17	29	13	----------	13	26
Peru	C	195	----------	36	37	6	----------
Portugal (see also table above)	C	104	150	99	54	55	----------
	D	6	27	16	4	4	----------
Portuguese East Africa	C	1	36	----------	----------	----------	----------
Turkey	C	2	2	5	5	19	----------
Union of Soviet Socialist Republics	C	231	----------	----------	----------	----------	----------

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Week ended— January 1935				February 1935				March 1935					April 1935		
					5	12	19	26	2	9	16	23	2	9	16	23	30	6	13	20
Algeria:																				
Algiers Department	C	4	4	2	2	1	1	1	1				5			6	1			4
Constantine Department	C	4		14	3	4	2	3	3	11	6	5	13	15	9	15	6	23	13	11
Bone	C							2												
Constantine	C	2	2	1		1				2	1	3		1	2		1	1	2	
Oran Department	C			2													11	2		
Southern Territories	C												6			2	3	2		1
Basutoland	C	46	28	3																
Belgian Congo	C	20	12	4	1	3									1					
Bolivia. (See table below.)																				
British East Africa: Uganda	C		10	1						4			1							
Bulgaria	C	7	7	13			8	2	1						1	3	3	2		
Chile	C	1,614	1,642	1,669	278															
Concepcion	C			5																
Iquique [1]	C	[1] 4																		
Santiago	C			931																
Valparaiso	C	17	33	68	4	11	6	1	5	1		1		2	1		2		2	
China:																				
Hangchow	C														1					
Hankow	C	1																		
Nanking	C														1					
Shanghai	C			4										1	2					
Tientsin	C						1	1												
Chosen. (See table below.)																				
Colombia	D						1													
Czechoslovakia. (See table below.)																				
Egypt:																				
Alexandria	C	1		1		1				1	2	2	3	1	3			5	4	4
Aswan	C		2	3										9	7	7	1		2	4
Asyut	C										1				4	6	1			
Beheira	C			17	8	14			44	23	37	58	34	34	53	50	52	57	72	63
Beni-Suef	C									3					2				1	
Cairo	C		1	1		1					3	4	2			3			4	1
Dakahliya	C		1			4		6	3	15	44	46	22	18	12	6	6	3	5	3
Damietta	D	1		1																
Faiyum	C	1																		
Gharbiya	C	1	6	6		4		29	38	41	73	84	61	40	58	30	35	36	54	38
Girga	C					1											7		1	1
Minufiya	C		15	21	1	2			4	7	9	13	7	10	16	15	36	27	35	35
Minya	C																1	1	1	1
Port Said	C		2	2					1							1	1			

Qena	C	3	1	6										1		1	2			
Sharkiya	C			1		1		6	4	7	12	9	7	4	9	33	8		8	10
Suez	C																1			
Provinces	C	10	29	59	9	27	39	68	87	95	182	217	137	118	168	152	163	151	199	172
Greece (see also table below); Salonika	C	3	4	5																
Guatemala. (See table below.)																				
Hungary	C			8			1				1								4	
Indo-China. (See table below.)																				
Iran	C	19	18	68	22	17	21	16	12	8	15	25	32	28	16	15	15	32		
Teheran	C	1						1							3		1	1		
Iraq:																				
Baghdad	C	1		1																
Sulaimani liwa	C																		1	19
Irish Free State:																				
Cork County—Castletown	C													1						
Waterford County—Lismore	C	1																		
Italy: Leghorn	C	1																		
Japan: Kobe	C	1																		
Latvia. (See table below.)																				
Libya: Tripolitania	C									2			2		2					
Lithuania	C	3	1	16	3	7		9	7	14	6	13	18	8	8	19	21	7		18
Mexico (see also table below):																				
Mexico, D. F	C	14		39	9	22	10	20	13	8	18	10								
Progreso	D															1				
Saltillo	D	1																		
San Luis Potosi	D	2																		
Torreon	C	5	1	2							1									
Morocco	C		1	17		3	3	1		4	6	14	4	5	3	8		29	26	25
Palestine	C	4			2															
Haifa	C	4	4	4							1	1			1				1	1
Jaffa	C			1	2														1	
Panama Canal Zone. (See table below.)																				
Peru. (See table below.)																				
Poland	C	48	61	124	34	36	60	69	69	82	57	83	84	128	118	114	136	163	128	
	D	5	9	10	3	1	6	7	4	3	8	6	2	11	8					
Portugal (see also table below):																				
Oporto	C			2																
Tarouca (near)	C					26														
Rumania. (See table below.)																				
Straits Settlements: Singapore	C				1							2				1				
Syria	C								1											
Trans-Jordan	C										2			4	2			1	3	4
Tunisia:																				
Tunis	C	1	1	4										1			2	5	9	11
Provinces	C	22	35	56	9	2	18	20	10	14	25	18	7	16	18	14	51	39	62	63
Turkey. (See table below.)																				
Union of South Africa. (See table below.)																				
Union of Soviet Socialist Republics. (See table below.)																				
Yugoslavia. (See table below.)																				
On vessel: SS. *Nosa Prince* at San Francisco	C																1			

[1] For the week ended Mar. 9, 1935, 11 cases of typhus fever were reported at San Jose nitrate camp about 42 miles from Iquique, Chile.

[2] Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place		October 1934	November 1934	December 1934	January 1935	February 1935	March 1935
Bolivia	C	46	40	103	37	32	43
Chosen	C	22	41	29	55	126	----
Czechoslovakia	C	----	----	7	15	18	----
Greece	C	6	5	15	3	2	----
Guatemala	C	18	18	21	31	20	30
Indo-China (French)	C	----	----	----	2	----	----
Latvia	C	3	----	8	2	----	----
Mexico (see also table above)	C	----	----	----	150	----	----
	D	----	----	----	40	----	----
Panama Canal Zone	C	----	----	----	1	1	----
Peru	C	86	52	17	13	32	----
Portugal	C	10	8	27	12	----	----
Rumania	C	48	85	127	246	240	----
Turkey	C	16	20	32	22	45	56
Union of South Africa:							
Cape Province	C	407	223	163	158	128	----
Natal	C	29	4	8	6	4	----
Orange Free State	C	403	309	296	133	69	----
Transvaal	C	32	39	29	14	16	----
Union of Soviet Socialist Republics	C	4,787	----	----	----	----	----
Yugoslavia	C	31	3	17	55	83	102

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Nov. 25–Dec. 29, 1934	Week ended— January 1935				February 1935				March 1935					April 1935	
					5	12	19	26	2	9	16	23	2	9	16	23	30	6	13
Brazil:																			
Goyaz State [1]	D	----	----	----	----	----	----	----	----	----	----	----	1	----	4	1	5	1	1
Mato Grosso State: Coronel Ponce.[2]																			
Minas Geraes State.[3]																			
Colombia: Intendencia of Meta—																			
Restrepo	C	----	----	----	----	----	----	----	----	----	----	----	2	----	----	----	----	----	----
	D	----	----	3	1	----	----	3	----	1	----	----	----	----	----	----	----	----	----
Villavicencio	D	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----
French Equatorial Africa: Middle Congo—Pointenoire	C	----	----	----	----	----	----	----	----	----	----	----	----	----	[4] 2	----	----	----	----
Gambia:																			
Bathurst	C	----	1	2	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----
St. Mary's Island	C	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Gold Coast:																			
Aperadi	C					2	1												
	D					1													
Kokobee	C		1																
Oda	C					1													
Wenchi	C		1																
Ivory Coast:																			
Banguoanou	C								1										
Bassam[5]																			
Bobo-Diolasso	C	[4]1										1							
Dibro	C			3															
	D			1															
Diekekro	C			1															
Dimbokro	C						1												
Gagnoa	C													1					
Ouagadougou	C											1							
Tirailleur	C	1																	
Toumodi	C			16															
	D			10															
Zuenoula	C			1															
Nigeria: Kano	C			2	1														
Niger Territory: Zinder	C	1				1													
	D	1																	
Sierra Leone:																			
Freetown	C														1	1			
Hill Station (near Freetown)	C					1													
Togo.[6]																			

[1] For the period Apr. 21 to May 11, 1935, 14 deaths from yellow fever were reported in 8 localities of Goyaz State, Brazil.
[2] During the month of October 1934, 1 case of yellow fever was reported at Coronel Ponce, Mato Grosso State, Brazil.
[3] For the period Apr. 28 to May 11, 1935, 9 deaths from yellow fever were reported in 5 localities of Minas Geraes State, Brazil.
[4] Suspected.
[5] For the period Mar. 11-20, 1935, 1 case of yellow fever with 1 death was reported near Bassam, Ivory Coast.
[6] During the week ended May 11, 1935, yellow fever was reported in Togo, as follows: 1 case at Agoueve, and 1 case at Koumea, Sokode Circle.